

# RETAIL MARKET TESTS OF FROZEN PREPARED MINCED FISH



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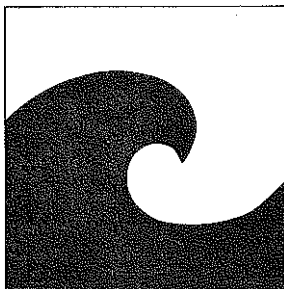
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## TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION . . . . .	1
OBJECTIVES . . . . .	2
PROCEDURES . . . . .	2
The Product . . . . .	2
The Package . . . . .	2
The Price . . . . .	3
The Stores . . . . .	3
In-Store Location . . . . .	4
Promotion . . . . .	4
Survey of Purchasers . . . . .	4
RESULTS . . . . .	4
Sales . . . . .	4
Sales of Competing Products . . . . .	6
Consumer Survey . . . . .	8
SUMMARY AND CONCLUSIONS . . . . .	9

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Dana C. Goodrich, Jr. and Daniel B. Whitaker\*

### Introduction

Fresh and salt waters of the world have long been recognized as reservoirs of protein food for human consumption. But their significance as enormously rich resources for society's use has only recently been appreciated. Greater attention than ever before has been given these potentials in the last 10 years as awareness of problems in world food supply has increased.

Prevailing consumption patterns and customs in some nations exclude many potential sources of marine nutrients. The United States is a good example. Here consumers are accustomed to the availability of conventional and limited forms of traditional marine and fresh water species of fin fish and shellfish. Fresh, frozen and canned haddock, flounder, tuna, salmon, shrimp, and clams are recognized in most households. Yet the less well-known forms and species which are not such common sights account for a huge untapped supply of edible fish and shellfish in the waters of the world. The possibility of presenting to US consumers a variety of modified forms of these otherwise neglected species holds promise for greatly expanding their use. A process of mechanically deboning fish, which yields minced fish (a product free of bones and other inedible portions of the carcass) offers such an opportunity for product modification.

A series of products prepared with minced fish were test marketed in retail stores by researchers at Cornell University. This report presents results of tests of the final product in this series. Test results for earlier products have been published.<sup>1/</sup>

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\* The authors are Professor of Marketing and Research Specialist, respectively, in the Department of Agricultural Economics, Cornell University.

<sup>1</sup> The following publications were authored by Dana C. Goodrich, Jr. and Daniel B. Whitaker and are available from the Department of Agricultural Economics, Cornell University, Ithaca, NY 14853: Retail Market Tests of Frozen Minced Fish, A.E. Res. 77-6, June 1977; Retail Market Tests of Minced Seafood Chowders, A.E. Res. 78-4, May 1978; Retail Market Tests of Minced Seafood Crispies, A.E. Res. 79-2, February 1979; Retail Market Tests of Canned Minced Fish, A.E. Res. 80-5, April 1980.

### Objectives

Consumer acceptance of new fish and seafood products is essential to the successful commercialization of underutilized species. The purposes of the study reported here were to:

- (1) Determine consumer reaction to a new frozen prepared minced fish product offered for sale in selected supermarkets,
- (2) Determine opinions of customers about the purchase and use of the new product, and
- (3) Suggest the likelihood of success of commercial production and distribution of such a product.

### Procedures

The new frozen product, named "Creamy Fish Bites," was placed on display at a price of \$1.49 per 18-ounce package in two supermarkets. For 15 weeks, sales volumes of the test product as well as closely related products were tabulated.

### The Product

It was expected that after home preparation, homemakers would serve the new product either as an entree or as an hors d'oeuvre.

Cayuga Brand Creamy Fish Bites were individually formed morsels prepared from a mixture of freshwater mullet, eggs, bread crumbs, and spices. Each bite weighed approximately one-half ounce. They were packed 25 to a container in six ounces of "cream" sauce consisting of fresh milk, modified food starch and spices, and were quick frozen prior to temporary storage and retail distribution. Personnel from the Cornell Department of Poultry Science formulated the recipe and prepared the product for market.<sup>2/</sup>

### The Package

Creamy fish bites were packed in an oven safe aluminum pan measuring 10 x 8 x 1 3/4 inches. An attractive four-color, foil-backed cardboard lid sealed by crimped edges of the pan served as the cover and sole display panel of each package. Heating instructions, ingredient listing and a stylized logo representing the ingredients were printed on the lid. (See cover and Figure 1.)

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<sup>2/</sup> Creamy Fish Bites, R. C. Baker, J. M. Regenstein and J. M. Darfler, Development of Products from Minced Fish: Booklet 4, December 1977, Department of Poultry Science, Cornell University, Ithaca, New York.

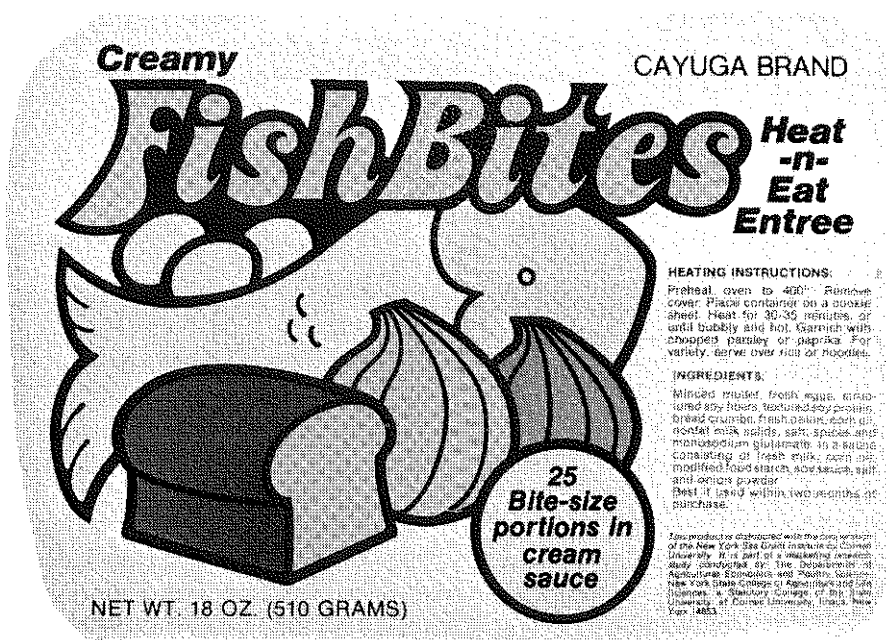


Figure 1. Cover for Cayuga Brand Creamy Fish Bites.

### The Price

The retail price of \$1.49 per package was competitive with other frozen prepared fish/seafood products. This low price was selected to reflect the expected low cost of the main ingredient, minced fish processed from under-utilized species.

Creamy fish bites were considered potential substitutes for 46 other frozen prepared fish or seafood items regularly offered in the test stores. Their prices ranged from \$1.03 to \$3.49 per package. The simple average price of these competing products was \$1.73. Their average content weight was 10.6 ounces. Therefore, the unit cost of creamy fish bites was approximately 8 cents per ounce while the comparable figure for the average of the commercially prepared products was about 16 cents. Thus, the creamy fish bites could have been viewed as a better economic value for the consumer but no effort was made to promote this fact during the test.

### The Stores

Cayuga Brand Creamy Fish Bites were made available at two medium-large supermarkets in one Upstate New York market. One store was located in a small suburban shopping center; the other was free-standing in an urban setting. The suburban store contained approximately 20,000 square feet of selling space and the urban store about 30,000 square feet.

### In-Store Location

Creamy fish bites were displayed along with commercially prepared frozen fish and seafood products. The urban store used upright glass-doored freezer cases, the suburban store open cases. Creamy fish bites were given two product facings which were maintained throughout the 15-week test.

### Promotion

No formal advertising program was used. However, in-store demonstrations and offerings of samples introduced the product for the first three weeks of the test.

Two women were hired to heat and serve samples of creamy fish bites. Each occupied a location near the frozen food display. Normal hours of demonstrations were from 11:30 a.m. to 6:30 p.m. each Thursday and Friday for the first three weeks of the test. Customers passing the demonstrators' display areas were offered a sample "bite" and, when appropriate, a short explanation of the New York Sea Grant test-marketing program. Approximately 3,600 samples were dispensed during the course of these demonstrations.

In-store promotional aids were also available at the demonstrators' tables. Two large 2 x 3 feet signs designed from full-color reproductions of the package logo and the large block letters "TRY ME!" were posted near the product display and demonstrations.

These demonstrations and signs represented the sole promotional support for creamy fish bites. After the demonstrations were terminated at the end of three weeks, the signs were the only promotional devices used for the remainder of the test.

### Survey of Purchasers

During the final seven weeks of the experiment, prepaid postcard questionnaires were inserted into 250 creamy fish bite packages. Purchasers were requested to complete the survey and return the card; multiple unit purchasers were cautioned to return only one survey card to avoid duplication of responses.

## Results

### Sales

A total of 1,668 packages of Cayuga Brand Creamy Fish Bites were sold during the 15-week experiment, an average of 111 units per week (Table 1). The suburban outlet, Store A, accounted for 60 percent of this volume. Average weekly movement was 66 packages at Store A; sales per 1,000 customer transactions reached 6.2 units. For both stores combined, sales per 1,000 customer transactions were 5.5 units.



Table 1. SALES OF CAYUGA BRAND CREAMY FISH BITES  
Two Supermarkets, 15 Weeks, October 1979-February 1980  
Upstate New York

Store	Total unit sales	Units per week	Units per 1,000 customers
Store A	983	66	6.2
Store B	685	46	4.7
Total	1,668	111*	5.5

\* Does not add due to rounding.

The product was not as readily purchased in Store B as in Store A. While the reasons for this difference were not carefully examined, informal observation suggested two possibilities. The larger selling area of Store B may have caused proportionately less of its shoppers to come upon the demonstration/sampling. Hence, greater numbers of potential purchasers may have been unaware of the product.

In addition, the composition of the clientele of the two stores differed. Age, income and occupational characteristics of shoppers in Store A were such that they may have been more inclined to purchase creamy fish bites than were Store B shoppers.

Volume of product sales varied over the course of the market test. During the three-week introduction, nearly 1,100 packages were purchased, an average of 179 units per store per week (Table 2). This represented movement of 17.2 packages per 1,000 customer transactions. The presence and action of the in-store demonstrators undoubtedly stimulated this high volume.

Table 2. SALES OF CAYUGA BRAND CREAMY FISH BITES, BY TIME PERIOD  
Two Supermarkets, 15 Weeks, October 1979-February 1980  
Upstate New York

Time period	Total unit sales	Units per week		Units per 1,000 customers
		Per store	Total	
Demonstration 3-week intro.	1,072	179	357	17.2
Weeks 4-12	476	27	53	2.7
Final 3 weeks	120	20	40	1.9
Total test	1,668	56	111	5.5

Unit movement declined dramatically following termination of the in-store demonstrations. During those nine weeks, total sales dropped to 476 packages for a per store average of 27 units per week. This represented 2.7 packages per 1,000 customer transactions.

The final three weeks of the test saw sales decline less sharply and establish a plateau. A total of 120 packages were purchased from both supermarkets, an average of 20 units per store per week, or about 1.9 units per 1,000 customer transactions. It should be recalled that this sales level was achieved without benefit of promotional support. There had been no promotion of creamy fish bites for nearly three months prior to these final three weeks of the test.

#### Sales of Competing Products

The two test supermarkets carried an average of 46 frozen, prepared fish or seafood items. Included in this "competing product" category were individual items which, like creamy fish bites, could be considered a separate entree or hors d'oeuvre. Such items as frozen breaded fish sticks, fillets or shrimp were examples. Excluded from consideration were frozen complete dinners, such as fish or seafood in combination with vegetables and potatoes. Fresh frozen (unprepared or unprocessed) fish and seafood products were likewise excluded.

Store invoices for these regularly offered competing goods were collected and tabulated during the 15-week test to monitor the movement of Cayuga Brand Creamy Fish Bites in relation to close substitutes. Relative to these goods, the market share held by creamy fish bites varied over time (Table 3). Nearly 40 percent of the unit movement of all prepared fish and seafood items sold during the three-week introductory period was captured by the new product. Again, the influence of the in-store demonstrations was apparent. Market share declined to 9 percent during the middle 9 weeks of the test and dropped still further to 5 percent as the experiment concluded. Nevertheless, the size of this final share was impressive since it was achieved without benefit of on-going promotion.

Table 3. AVERAGE WEEKLY SALES OF CAYUGA BRAND CREAMY FISH BITES  
AND COMMERCIAL FISH AND SEAFOOD ITEMS  
Two Supermarkets, 15 Weeks, October 1979-February 1980  
Upstate New York

Time period	Cayuga Brand Creamy Fish Bites	Commercial prepared fish and seafood items	All prepared fish and seafood items	Cayuga Brand as a percent of all prepared fish and seafood items
(Average number of units per week)				
Four-week pretest	--	657	657	--
Test:				
Introductory 3 weeks	357	552	909	39
Middle 9 weeks	53	523	576	9
Last 3 weeks	40	716	756	5
Four-week post-test*	--	1,192	1,192	--

\* New, inexpensive seasonal line added to stores' offerings accounted for high sales levels during the four-week, post-test period.

During the final three weeks of the market test, combined stores' sales averaged 716 units of competing prepared fish or seafood, or 358 packages per store. Among the 46 items offered, this averaged about 8 units or packages per item. Sales of Cayuga Brand Creamy Fish Bites therefore were approximately 2 1/2 times the average unit movement of the similar commercially prepared items.

Great variation in unit movement existed among competing frozen prepared fish or seafood items. Many exceeded the average unit movement within the group by a larger margin than did creamy fish bites. Nonetheless, the new product's success was achieved without the impetus of promotion received by the other 46 products.

To account for the effect of changes in customer traffic, unit product movement was analyzed according to numbers of customer transactions in the test stores. For example, movement of about 650 units per week of commercially prepared products during the four weeks preceding the experiment represented sales of 31.0 units per 1,000 customer transactions (Table 4). The three-week introduction of Cayuga Brand Creamy Fish Bites brought an increase in all frozen prepared fish and seafood sales to about 44 units. Invoices for the succeeding nine weeks indicated a decline in sales of both the commercial items and creamy fish bites to a total prepared fish and seafood volume of 29.0 units per 1,000 customer transactions.

Table 4. FROZEN PREPARED FISH AND SEAFOOD ITEM SALES  
PER 1,000 CUSTOMERS  
Two Supermarkets, 15 Weeks, October 1979-February 1980  
Upstate New York

Time period	Cayuga Brand Creamy Fish Bites	Commercial prepared fish and seafood items*	All prepared fish and seafood items
(Units per 1,000 customer transactions)			
Four-week pretest	--	31.0	31.0
Test:			
Introductory 3 weeks	17.2	26.4	43.6
Middle 9 weeks	2.7	26.3	29.0
Final 3 weeks	1.9	33.9	35.8
Four-week post-test**	--	56.8	56.8

\* Forty-six items at an average price of \$1.73.

\*\* Seasonal line added (Lent).

Sales of the commercial items increased during both the final three weeks of the test and the subsequent four-week, post-test period. The Lenten season likely contributed to this increase. Moreover, a relatively inexpensive line of battered and breaded fish products was added to the stores' display during the post-test weeks. In total, nearly 1,200 packages of prepared fish or seafood were purchased weekly during this post-test period, accounting for sales of nearly 57 units per 1,000 customers.

#### Consumer Survey

Ninety postcard surveys attached to creamy fish bite packages during the final seven weeks of sales were completed and returned by purchasers, a response rate of about 36 percent. Over three-quarters of the respondents indicated that they had purchased the product on two or more different occasions (Table 5). Nearly half had bought two or more packages during one shopping trip.

Table 5. MAIL SURVEY RESPONSES, 90 PURCHASERS OF CREAMY FISH BITES  
Two Upstate New York Supermarkets, 1979-1980

Factor	Results
	(Percent)
Purchased creamy fish bites two or more times	78
Purchased two or more units on a single shopping trip	46
Purchased creamy fish bites as substitute for other frozen prepared fish/seafood	40
Intending to repurchase	96
Repurchase intentions by expected frequency of repurchase:	
Once per week	19
Twice per month	50
Once per month	23
Nonspecific frequency	9

The importance of substitute purchases cannot be ignored in new product testing, but it seldom is possible to resolve this question with certainty. Nevertheless, creamy fish bite customers were asked to recall whether their new product purchases were substitutes for other items. According to their responses, 40 percent said that they bought the product as a substitute for one or more of the 46 other frozen prepared fish, seafood items.

Nearly all the respondents said they planned to purchase the bites again sometime in the future. Approximately 20 percent felt they would repurchase the product at least once a week while another 70 percent said they planned to buy the bites once or twice a month. Expressions of intentions gathered in this manner often are shown to overstate actual purchase frequency. Indeed, sales results during this test do not support the validity of these high intended purchase rates.

### Summary and Conclusions

A specially prepared frozen entree in 18-ounce consumer packs was sold in a limited test in two Upstate New York supermarkets for 15 weeks. Principal ingredient of the test product was minced fish. In-store demonstrations on six days during the first three weeks of the test represented the product's only promotion.

Very high sales levels during the introductory period gave way to a level averaging about 20 units of the test product per store per week during the final three weeks of the test. This level was the lowest in the 15-week period since no promotional support was provided. Nevertheless, unit sales of the new product remained two and one-half times as large as that of the average of all other frozen prepared fish and seafood items in the test stores. This persistence well after removal of promotional assistance suggests that such a product can generate profitable sales on a commercial basis.